HICKORY DICKORY DOCK

OK, here goes, my results

Time for cork to go up and return on average 6.6 s.

That gives a time to reach the max height 3.3 s

At height v=0, a=-9.8 ms^{-2}, t=3.3s.

Using $v = u + at$ we can find

$$v = u + at$$

$$0 = u - 9 \cdot 8 \times 3.3$$

$$u = 32.34\, ms^{-1}$$

Now the best way to work out s is putting this result into the equation for height

$$s = ut + \frac{1}{2}at^2$$

$$s = 32.34 \times 3.3 + \frac{1}{2} \times -9.8 \times 3.3^2$$

$$\underline{\underline{s = 44\, m}}$$